

PREPAREDNESS PREVENTION AND CONTINGENCY PLAN (PPC) WASHINGTON COUNTY

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1.0 EXECUTIVE SUMMARY

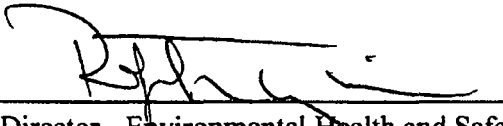
This Preparedness Prevention and Contingency (PPC) Plan is prepared for Range Resource Appalachia, LLC's (RRC) operations in Washington County, Pennsylvania. The sites are identified in the drilling permit applications, which will be located in Washington County. This PPC Plan was developed in accordance with PA DEP Guidelines #400-2200-001/September 2001, *Guidelines for the Development and Implementation of Environmental Emergency Response Plans*.

This PPC Plan is an integral part of the operation's environmental, health and safety program. It is designed to provide for foreseeable workplace occurrences and provide the response framework for those occurrences, which have the potential for employee injury or environmental damage. It contains program elements designed for prevention/control of accidental discharges of regulated substances. Further, the plan is designed to be flexible, with established guidelines, and will be reviewed on a regular basis to assure the plan is a current, viable, and useful tool.

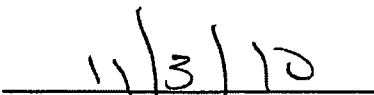
Mr. Ralph Tijerina is the administrator of this PPC Plan and is responsible for implementation and maintenance. Reviews and revisions of this plan will be completed annually unless plan failure, operational changes, or regulatory revisions necessitate otherwise. Any questions, comments, or suggestions regarding this PPC Plan should be directed to Mr. Ralph Tijerina.

Authorized for Implementation:

Ralph Tijerina



Director - Environmental Health and Safety



Date Implemented

2.0 PLAN REVIEW RECORD

The following table is a record of the periodic revisions made to this plan since the original date of plan implementation. It is required by the PADEP that the plan be reviewed annually. This plan will also be reviewed and revised if any of the following occur:

- An applicable regulation is revised;
- The plan fails in an emergency;
- There is a change in the design, construction, operation, or maintenance that materially affects the operation's potential for discharge;
- The list of emergency coordinators changes;
- The list of emergency response equipment changes; or
- As otherwise directed by an applicable agency.

Date	Revision	Signature	Comments
1-1-2009	1A		Update
10/2009	2		Added Appendix D and Appendix E and Updated Plan
03/2010	3		Updated Satellite Emergency Numbers, Added Appendix F, and Modified to Address Impoundment Inspections
4/2010	4		Updated Appendix F
6/2010	5		Update Section 5.2, Section 6.5 and Appendix F
11/2010	6		Updated Contact Information

3.0 DESCRIPTION OF SITES

3.1 Description of the Industrial or Commercial Activity

Activity to be conducted at these sites will include, but not be limited to, the construction of the access road to the well-site and the pad on which the drilling operation will be conducted, drilling of the borehole following the casing design and strategic analysis described in the Drilling Permit Application, completing and fracing of the well, flowback operations and production. The operation will be at various locations as described in the drilling permit applications for wells within Washington County. All coordinates for each borehole are stipulated in the drilling permit applications.

- The average constituents of the NGL are propane (18.28%), butane (24.59%), iso-butane (7.32%), and pentane and longer chain hydrocarbons (49.81%).
- The operation's North American Industry Classification Systems (NAICS) code is 211111 (Crude Petroleum and Natural Gas Extraction).

3.2 Description of Existing Emergency Response Plans

This plan is compatible with existing emergency response and spill prevention plans. The operations and subcontractors maintain a Spill Prevention Control and Countermeasure (SPCC) Plan compliant with 40 Code of Federal Regulations Part 112.

3.2.1 Assessments of Impacts on Downstream Water Supplies or Water Wells in Area

As part of the plan to ensure that no impacts occur to either downstream water supplies or water wells, an assessment of all water sources within a 1,000 ft radius of the well site will be conducted by identifying the location and samples will be taken to establish a baseline for the water quality prior to any activity.

The samples will be collected and tested by a state certified water-testing laboratory in order to assure an independent objective assessment. These test results will be maintained in the well file for future reference if they are required for comparison to samples taken after our activity is completed.

Best Management Practices (BMPs) will be in place to prevent the contamination of any water supply either downstream surface water supply or an identified water well. Pre-drill water sampling will be conducting in accordance with established sampling and analytical protocols.

Well Control Guideline plans include the use of equipment to contain any large amounts of water which may be required to contain or control any fires should the need exist.

During the drilling and completion process, all returned fluids will be contained in a lined reserve pit, 500 bbl frac tanks, or large lined impoundments to prevent any run-off that could cause contamination to existing water wells or surface water.

3.3 Materials and Waste Inventory

3.3.1 Liquid Storage Description

- 5 gal pails
- 55 gal drums
- 500 gal intermediate bulk containers
- 20,000 gal max diesel storage

3.3.2 Dry Bulk Storage Description

- 50 lb sack chemicals
- 55 lb sack chemicals
- 100 lb sack chemicals
- 1 ton bulk bag

The products that are used for the operations described above, but are subject to change based on the circumstances encountered during the development of the project are included in Appendix F. The MSDS for each product are required to be on site while any chemical is staged on location.

3.3.3 Waste

Waste accumulated on site will be collected and disposed of in the manner required by the Pennsylvania Department of Environmental Protection, dependent upon the classification. Waste will be minimized by the utilization of larger packaging containers. Where possible, intermediate bulk containers will be used as they can be reutilized instead of using drums thus resulting in minimal waste products.

Municipal Waste

Containerization via Waste Management, or other local, permitted waste facility/hauler.

Produced/ Frac/ Pit Water

All produced water, including drilling water, flowback water, and produced brine will be collected and either disposed according to the appropriate regulations at a permitted disposal facility or underground injection well, or will be recycled. If being disposed at a permitted disposal facility or underground injection well, one of the following companies may be used to transport the water to one of the disposal sites identified in Section 6.6:

R.T.I.
Highland Environmental Sanitation
MJ Water Co, Inc
Woods Trucking
Ted Stutzman
Devonian Industries, Inc
Burkholtz Welding
Stallion Oilfield Services
Force

If the water is being recycled, the water will be either trucked to the appropriate impoundment or pumped through aboveground piping. If the water is being transported via trucking, one of the companies detailed above may be used to transport the water to the permitted impoundment. If the water is being pumped through aboveground piping, An RRC approved water transfer contractor will be utilized to pump the water through the aboveground piping to the permitted impoundment.

3.4 Pollution Incident History

Completed records of past and future occurrences with spill reporting and response shall always be included in Appendix B.

Should a spill occur, the following information will be recorded and maintained for five years:

1. Date and time of incident;
2. Location of incident;
3. Name of individual discovering the incident;
4. Product released and amount released;
5. Causes of the spill, including failure analysis;
6. Corrective actions and/or countermeasures taken and additional preventative measures taken or contemplated.

3.5 Implementation Schedule for Elements Not Currently In Place

As of the signature dates on page 1 of this plan, all elements of this plan are currently in place.

4.0 DESCRIPTION OF HOW PLAN IS IMPLEMENTED BY ORGANIZATION

4.1 Organizational Structure of Facility for Implementation (Pollution Prevention Team)

The operational headcount on site will be no more than 30 personnel at any given time which includes both RRC and its subcontractors. The primary emergency coordinator's duties and responsibilities will be as follows:

1. Risk management and inventory of materials,
2. Establishment of all spill-reporting duties,
3. Implementation of visual inspection procedures,
4. Review of past incidents and actions taken,
5. Implementation of plan goals,
6. Coordinate all spill clean-up activities,
7. Notification of all necessary authorities,
8. Education and training of all on-site personnel,
9. Evaluation of plan and change as needed,
10. Review any changes relative to the current plan,
11. Evaluate overall effectiveness of plan, and
12. Review and update the plan on a regular basis and make changes as necessary.

Changes made to the plan which affect personnel will be communicated at the earliest available time, generally during safety meetings and put into practice as part of standard operating procedures, where necessary. Where mentoring or extended training is required for the individuals to gain experience, a mentoring system will be put in place and On-The-Job training will be documented.

4.2 List of Emergency Coordinators

The following table shows a list of the Emergency Coordinators for Range Resources Appalachia, LLC, Washington County.

All calls to report an emergency or contact one of the Emergency Coordinators should be to:

(866) 768-4756

Emergency Coordinators

Name	Title
Mr. Ralph Tijerina	Director - Health, Safety and Environmental
Mr. Craig Wyda	Sr HSE Technician
Mr. Hugh White	Security Manager – Health, Safety, and Environmental

In the event the Primary Emergency Coordinator is not present at the time of an emergency, the designated alternate individuals will accept those responsibilities.

In the rare event none of the above personnel are present; the ranking supervisor on-site will be in charge of the facility until the appropriate personnel can be contacted. All supervisory personnel who may be in charge of the facility will be trained in the proper response procedures in the event of an emergency.

Emergency phone numbers along with site lat/long coordinates will be clearly posted on-site.

4.3 Duties and Responsibilities of Emergency Coordinators

The Emergency Coordinator is responsible for the review of existing materials, storage of materials and the necessary recommendations/upgrades to update the PPC Plan, if appropriate.

If the Emergency Coordinator determines that the site has had an emission, discharge, fire, or explosion, which would threaten human health or the environment, the Emergency Coordinator must immediately notify:

- Southwest Region of the Pennsylvania Department of Environmental Protection (412-442-4000);
- Pennsylvania Department of Environmental Protection Oil & Gas Inspector;
- National Response Center (800-424-8802); and
- Pennsylvania Emergency Management Agency (717-651-2001); and report the following:
 - Name of person reporting incident,
 - Name and location of the facility,
 - Phone number where the person reporting the spill can be reached,
 - Date, time, and location of the incident,
 - A brief description of the incident, nature of the materials involved, extent of injuries, and potential effects on health or the environment,
 - Estimated quantities of the materials involved, and
 - The extent of contamination of land, water, or air, if known.

During an emergency, the Emergency Coordinator must take all reasonable measures necessary to ensure that fire, explosion, emission, or discharge do not occur, reoccur, or spread to other materials or wastes at the site. These measures shall include, where applicable, stopping operations, collecting, and containing released materials or wastes, and removing or isolating containers.

If the facility ceases operations in response to a fire, explosion, emission, or discharge, the Emergency Coordinator must ensure that adequate monitoring is conducted for leaks, pressure buildup, or ruptures in valves, pipes, or other equipment, wherever it is appropriate.

4.3.1 Duties after an Emergency

Immediately after an emergency, the Emergency Coordinator, with Pennsylvania Department of Environmental Protection (PA DEP) approval, must provide for treating, storing, or disposing of residues, contaminated soil, etc., from an emission, discharge, fire, or explosion at the site.

The Emergency Coordinator must ensure that in the affected areas of the site, no material or waste incompatible with the emitted or discharged residues is processed stored, treated, or disposed of until cleanup procedures are completed; and, all emergency equipment listed in the plan is cleaned and fit for its intended use before operations are resumed.

Within fifteen (15) days of the incident, the facility will submit a written report on the incident to the PA DEP, **unless requested sooner by the PADEP.**

4.4 Company Officials

The Emergency Coordinator will notify the following company officials, if appropriate:

Range Resources – Company Officials

Name	Title	Telephone Number
Mr. John Applegath	Vice President - Operations	(724) 678-7054
Mr. Joe Frantz	Vice President - Engineering	(412) 512-6544
Mr. Scott Roy	Vice President – Government and Regulatory Affairs	(717) 329-3441
Mr. Ray Walker	Senior Vice President – Shale Appalachia	(724) 822-0916

5.0 SPILL OR LEAK PREVENTION AND RESPONSE

5.1 Pre-Release Planning

The sources for potential spills/leaks for these sites are from aboveground storage tanks, impoundment ponds, drum and intermediate storage containers, and above ground piping which are summarized in Table 5.1.

The properties where most sites reside are situated on gentle slopes though all efforts will be to remain on level property. Where the landscape is sloped, the natural flow would be in any given location. Pre-planning addresses the potential hazards and ensures that measures will be taken to minimize any exposures which may occur. Therefore, most small spills would not travel far over the porous gravel surface.

GENERAL DESCRIPTION OF LOCATION

The location of each well site is defined in the Drilling Permit Application and depicted on the adjoining topographic map. However, each road and site pad will be constructed in a manner which minimizes the disturbance of land and will follow the Erosion and Sedimentation Control Plan, and where applicable, the ESCGP-1 permit. The areas for vehicular traffic will maintain a top layer of rock to stabilize the property.

Any centralized impoundments will be designed and constructed in a manner to maintain an interior slope of 3 horizontal to 1 vertical (3H:1V); exterior slopes of 3H:1V; a bottom slope of approximately 1% and a minimum berm width of 12 ft. These standards are the minimum standards for these types of impoundments and will follow the guidelines developed and required by the PA DEP.

5.2 Pollution Incident Prevention Practices

5.2.1 Fail Safe Engineering

There are many safeguards that are followed in all of our operations to prevent the accidental discharge of material. Many of the storage tanks are equipped with means to gauge the volume in the tank at any given time. Secondary containment according to the contractor's SPCC Plan will be required to ensure that any spills are contained. Refer to Section 5.2.3 of this PPC Plan for details of secondary containment. The BOPs will be operable during activities involved in the drilling and completion of the well to prevent blowouts should excess back pressure be experienced.

5.2.2 Preventive Maintenance

Preventative maintenance at the well site and at the impoundments involves the regular inspection and testing of the equipment and operational systems. A preventative maintenance program emphasizes the upkeep and maintenance of systems, which could, upon breakdown or failure, result in conditions that could cause environmental degradation or endangerment of public health and safety. If any deficiencies and/or leaks are discovered during the following preventative maintenance activities, the deficiencies are promptly corrected and any spilled material is immediately cleaned up. Site Inspection Checklist Forms are included in Appendix A.

- **Well Site Visual Observations** - The site is manned 24 hours a day and visual inspections will be conducted throughout.
- **Impoundment Visual Observations** – The impoundment facilities are manned 24 hours per day if there are water transfer operations ongoing at the facility, and visual inspections will be conducted throughout.
- **Well Site Detailed Inspections and Monitoring** – See Section 5.4.1, Inspection and Monitoring Program for a list of detailed inspections.
- **Impoundment Detailed Inspections and Monitoring** – See Section 5.4.2, Inspection and Monitoring Program for a list of detailed inspections.

5.2.3 Discharge and Drainage Control

- **Secondary Containment**
 - One to eleven above ground storage tanks with volumes between 210 and 400 bbls each will utilize secondary containment as defined in the SPCC Plan
 - Frac tanks will vary in volume according to the requirements of the project. Those containing any hazardous materials will be diked accordingly to minimize run off.
- **Vapor Control**
 - Provided by pressure relief valves/fittings as appropriate.
- **Dust Control** (Not applicable at this operation)

5.2.4 Mitigation

Personnel are provided with proper protective clothing and eyewear. Cleanup will be performed with brooms, shovels, and absorbent materials for small spills, and outside contractor services for large spills.

5.2.5 Ultimate Disposition of Contaminated Materials

All contaminated soils, sorbents, and waters are disposed of through properly permitted subcontractors.

5.3 Material Compatibility

Materials held in inventory are stored properly to ensure material compatibility. Incompatible materials should be recognized and individuals working at the facility should be properly informed through signage, training, etc.

An inventory of the materials stored at the facility was taken and the corresponding Material Safety Data Sheets were collected. The chemicals comprising the Engine oil, Hydraulic fluid, Methanol Inhibitor, and Antifreeze were entered into a chemical reactivity prediction program. The Chemical Reactivity Worksheet Version 1.9, developed by the CAMEO (Computer Aided Management of Emergency Operations) Team at the Hazardous Materials Research Branch of the Office of Response and Restoration at the National Oceanographic and Atmospheric Administration (NOAA) and the Chemical Emergency Prevention and Preparedness Office at the U.S. EPA was used to predict if a reactivity hazard may occur from a scenario where two materials were mixed. The computer model did not predict any unsafe reactions between the materials kept in inventory. The computer model cannot predict reactions from three or more chemicals mixing at once.

5.4 Inspection and Monitoring Program

5.4.1 Well Site Inspection and Monitoring Program

Inspections at well sites are made to check for leaks and potential hazardous areas and are documented on the checklist provided in Appendix A of this Plan. Specific inspections are performed as follows:

- Observing the exterior of ASTs, and other equipment for signs of deterioration, leaks, corrosion, and thinning.
- Checking the inventory of discharge response equipment and restocking as needed.

AST integrity inspections should be performed at intervals and specifications according to industry standards for the type of tanks present at the facility.

5.4.2 Impoundment Inspection and Monitoring Program

Inspections at impoundments are made to check for leaks and potential hazardous areas and are documented on the form provided in Appendix A of this Plan. Specific inspections are performed as follows:

- Observing the leak detection underdrain for any sign of discharge of water during the inspection or since the previous inspection.
- Checking the inventory of discharge response equipment and restocking as needed.

Inspections are conducted weekly at impoundments holding only fresh water and are conducted 2 times per week at impoundments that holding recycled water.

5.5 Brittle Fracture Evaluations and Preventive Maintenance

There are no field-constructed tanks that will be utilized on site.

Inspections will be conducted for the following, which could result in contamination of the work area or environment:

- Leaks in containment systems, tanks and piping
- Proper function of transfer pumps and isolation valves
- Condition of material handling equipment

Preventative maintenance will be performed on any areas found to be deficient as part of these inspections. This corrective action will be accomplished and documented. This documentation and the original inspection report will be retained in accordance with the requirements of this plan.

5.6 Housekeeping Program

The following items will be performed as part of facility housekeeping:

- Equipment, packaging materials, and miscellaneous materials will be inspected for leaks, oily surfaces, etc. Deficiencies shall be promptly corrected.
- Areas where materials are unloaded, transferred, or loaded will be kept free of debris.

- Cleanup, storage, disposal, and inspection procedures will be reviewed with facility personnel as part of the training requirements of this plan.
- Housekeeping conditions will be included in the facility inspections conducted in accordance with this plan.

5.7 Security

During various activities in the development of the well-site, there will be a need for security to be present at the entry point to the well site. During these periods, visitors are required to sign in and authorization will be required should they arrive unexpectedly. Only authorized personnel will be allowed on the site. When security personnel are not on site to guard the entrance, Range's person in charge on-site will be responsible for managing personnel arriving on site.

5.8 External Factor Planning

Employees are trained in procedures that are in place for emergency situations. Power outages, floods, and/or snowstorms may prevent operations from continuing, but should not result in an incident that would have an adverse effect on public health or the environment. Power outages do not increase the likelihood for release of pollutants and do not affect spill prevention measures, or spill containment, cleanup, and removal operations.

In the event of an external emergency situation, no operations involving regulated material transfer will be initiated at the site.

5.9 Training Program

Employee training shall be conducted periodically to ensure that all responsible employees are knowledgeable of emergency and spill response procedures. All employees with responsibilities under this plan shall receive annual training in the following areas, as required:

- Knowledge of the basic hazard and risk assessment techniques.
- Know how to perform basic control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.
- Know how to implement basic decontamination procedures.
- An understanding of the relevant standard operating procedures and termination procedures.

Employees completing the training shall be capable of demonstrating competency in the above training elements. Elements of the plan that enhance the prevention and management of environmental and safety incidents should also include and provide for training in these areas:

- Housekeeping
- Material Management Practices
- Loading and Unloading Procedures
- Site Emergency and Evacuation Procedures
- Preventative Maintenance
- Visual Inspections

This training shall be documented and included in the employee personnel files. A sufficient number of personnel shall be trained to ensure that personnel are capable of responding effectively to emergencies and to satisfactorily accomplish an evacuation of the facility if required.

6.0 COUNTERMEASURES

6.1 Countermeasures to be Undertaken

Spills of liquid material (mineral oil or aliphatic hydrocarbon) may occur from storage tanks, flow loop, equipment leaks, impoundment leaks, or spills during transfer. In the event of a spill or release, designated personnel will take the following steps:

6.1.1 Petroleum-Based Release or Hazardous Material Response Procedures: Minor Release

In the event of a minor release of oil or petroleum product to the environment, the following emergency response procedure will be conducted. A minor release is defined as a release of **less than 25 gallons** of oil product and/or less than the reportable quantity of a material to an aboveground surface, which is contained to the immediate area and does not adversely impact human health and the environment, and **does not immediately threaten groundwater or surface water**. In the event of a minor release, the following procedure will be conducted if personal safety is not at risk:

- Upon discovering a spill, the employee must immediately notify the Emergency Coordinator.
- The Emergency Coordinator will determine if the spill cleanup is within the capabilities of the Range Resources personnel to contain.
- The Emergency Coordinator may initiate the following activities, if deemed appropriate:
 - Shutdown all facility operations; and
 - Invoke evacuation of the facility.
- If the determination is made that Range Resources personnel can respond to the spill safely, then booms, spill stoppers, and absorbent materials will be deployed to contain the spill and prevent the released material from migrating.

- The Emergency Coordinator will make the necessary notifications to key Range Resources personnel, local emergency agencies, and the spill response contractor, as required.
- Call a spill response contractor listed in Section 7.1, if the on-site personnel are unable to control the release or if cleanup is necessary.
- Notify the National Response Center (1-800-424-8802) to report the release if the released material is capable of reaching navigable waters. A listing of the Emergency Response telephone numbers is provided in the Section 7.1 and 7.2.
- Assess the area to ensure that human health and environmental hazards have been mitigated.
- If the incident is associated with a release from an impoundment leak detection underdrain, dye will be added to the impoundment to determine if the discharge from the underdrain is water leaking from the impoundment. Additionally, a sample will be taken from the water in the impoundment and from the water discharging from the underdrain and the appropriate analytical will be run in the laboratory.
- Complete an incident report and update the PPC Plan and the SPCC Plan. Refer to Appendix A for a copy of the Incident Report Form.

6.1.2 Petroleum-Based Release or Hazardous Material Response Procedures: Major Release

A major release is defined as a release of **25 gallons or greater** of oil product and/or over the reportable quantity of a material to the environment or a release which **immediately threatens groundwater or surface water**. In the event of a major release where the material cannot be controlled, contained or mitigated by facility personnel, the following procedure will be implemented:

- If imminent danger exists, immediately notify everyone at the facility. Engage appropriate evacuation procedures, as necessary.
- Upon discovering a spill, the employee must immediately notify the Emergency Coordinator.

- The Emergency Coordinator will determine if the spill cleanup is within the capabilities of the Range Resources personnel to contain.
- The Emergency Coordinator may initiate the following activities, if deemed appropriate:
 - Shutdown all operations; and
 - Invoke evacuation of the site.
- If the determination is made that Range Resources personnel can respond to the spill safely, then booms, spill stoppers, and absorbent materials will be deployed to contain the spill and prevent the released material from entering the nearest down-gradient storm drain.
- The Emergency Coordinator will make the necessary notifications to key Range Resources personnel, local emergency agencies, and the spill response contractor, as required.
- Call a spill response contractor listed in Section 7.1, if the on-site personnel are unable to control the release or if additional cleaning is necessary.
- Notify the National Response Center (1-800-424-8802) to report the release if the released material is capable of reaching navigable waters. A listing of the Emergency Response telephone numbers is provided in Section 7.1 and 7.2.
- Contain the released product with all available equipment. All spent absorbent material will be placed in appropriate containers and properly transported off-site for disposal.
- Assess the area to ensure that human health and environmental hazards have been mitigated.
- If the incident is associated with a release from an impoundment leak detection underdrain, dye will be added to the impoundment to determine if the discharge from the underdrain is water leaking from the impoundment. Additionally, a sample will be taken from the water in the impoundment and from the water discharging from the underdrain and the appropriate analytical will be run in the laboratory.
- Complete an incident report and update the PPC Plan and SPCC Plan. Refer to Appendix A for a copy of the Incident Report Form. Notify the Emergency Coordinators and/or Acting Emergency Coordinators. A listing of the Emergency Response telephone numbers is as follows.

- **Spill response contractor** listed in Section 7.1, if the on-site personnel are unable to control the release or if cleanup is necessary.
- **National Response Center (1-800-424-8802)** to report the release if the released material is capable of reaching navigable waters.
- **Pennsylvania Department of Environmental Protection (PADEP) (412-442-4000)** within 30 minutes of a major release.
- **Pennsylvania State Police (911) or Satellite Number (724-229-4600)** within 30 minutes of a major release.

6.2 Countermeasure to be Undertaken by Contractors

A release that cannot be contained, controlled, and/or cleaned up by on-site personnel will require assistance from an emergency contractor listed in Section 7.1. The emergency contractor will take all necessary measures to contain, control, and/or clean up the release.

6.3 Internal and External Communications and Alarm Systems

During a spill or release, cellular telephones, 2-way radios, voice, and/or hand signals are utilized to provide immediate instruction to facility personnel. Telephones are utilized to communicate with emergency contractors and emergency response agencies in the event of a spill or release.

6.4 Evacuation Plan for Facility Personnel

In the event of a spill or release beyond a minor incident, all visitors and personnel not essential to the control and cleanup operations will evacuate the area. These individuals will exit the facility through the nearest available exit and proceed to the assembly point identified by the Emergency Coordinator (if possible, an area upwind and uphill from the incident). Employees can exit the facility by means of one (1) access road and travel in either direction along public roads to a place of safety. Signals used to begin evacuation will be voice or radio. At the

assembly point, the Emergency Coordinator or their designee will be responsible for a head count to ensure that all personnel have been accounted for.

6.5 Emergency Equipment Available for Response

Emergency equipment is maintained in proper working order, clearly labeled, and stored in strategic locations. Emergency equipment includes, portable fire extinguishers (periodically tested), spill control equipment, and first aid supplies. The spill control equipment is maintained in spill kits containing the following materials.

- 55 or 85 Gallon Drum
- Personal Protective Equipment- Nitrile gloves, Poly Tyvek, Overboots
- Oil absorbent pads, 4" oil absorbent boom, and oil absorbent granular floor dry.

If additional equipment is needed, an Emergency Response Contractor listed in Section 7.1 will be contacted to assist in containment and cleanup efforts.

After an emergency, all the equipment used will be decontaminated, cleaned, and inspected for proper working order before normal operations resume.

All equipment used for emergency procedures shall be kept in satisfactory condition and maintained and or replaced as needed. All contaminated tools or equipment shall be properly cleaned or disposed. Emergency equipment shall be tested for proper working order and be replaced as necessary.

6.6 Disposal

Waste oils, fuels, and contaminated rainwater collected at the facility as a result of a spill that cannot be recovered will be properly disposed at an appropriately permitted facility. Some liquids may also be re-used. Disposal Sites in which produced water disposed of are as follows:

Liquid Assets Disposal (LAD)

New Castle Environmental

Franklin, PA Brine Treatment Plant

Tunnelton Liquids

Eureka Resources

6.7 Regulatory Agency Reporting

An incident report form is provided in Appendix A, and will supply required information for federal, state, and local authorities as required.

6.7.1 Federal Reporting

The facility will notify the appropriate regulatory agencies and submit the current Spill, Prevention, Control, and Countermeasures (SPCC) Plan to the USEPA Region III Regional Administrator and other appropriate regulatory agencies if either of the following occurs at the subject site:

- The site discharges more than 1,000 gallons of oil into or upon the navigable waters of the United States or adjoining shorelines.
- The site discharges oil over 42 gallons in two spill events within any 12-month period.

The following information will be provided to the agencies within 60 days of a reportable spill:

- Name of the facility,
- Name(s) of the facility owner/operator,
- Location of the facility,
- Date and year of initial facility operation,
- Maximum oil storage or handling capacity and daily throughput,
- Description of facility, including maps and diagrams,
- Complete copy of the PPC and/or SPCC and amendments,
- Cause of the spill, including failure analysis, and
- Corrective actions and/or countermeasures taken.

6.7.2 State Reporting

An incident report form that will supply required information for federal, state, and local authorities is included in Appendix A.

Within fifteen (15) days of a reportable incident, the Facility will submit a written report to the PA DEP. A reportable incident includes the following:

- The facility discharges any quantity of oil or regulated substances that immediately threatens groundwater or surface water.
- The facility discharges at least 25 gallons of oil or a regulated substance onto an aboveground surface.
- A release of a hazardous substance to an aboveground surface that exceeds its reportable quantity under the Comprehensive Environmental Response, Compensation, and Liability (CERCLA) Act of 1980 and 40 CFR Part 302 (relating to designation, reportable quantities, and notification).
- A release of brine with a Total Dissolved Solids concentration less than 10,000 mg/L of 15 gallons or more.
- A release of brine with a Total Dissolved Solids concentration greater than 10,000 mg/L of 5 gallons or more.

The following information will be provided to the PA DEP within 15 days of a reportable spill:

- Name, address, and telephone number of the installation,
- Date, time, and location of the incident,
- A brief description of the circumstances causing the incident,
- Description and estimated quantity by weight or volume of materials or wastes involved,
- An assessment of any contamination of land, water, or air, which has occurred due to the incident,
- Estimated quantity and disposition of recovered materials or wastes that resulted from the incident, and
- A description of what actions the installation intends to take to prevent a similar occurrence in the future.

6.8 Fire Suppression System

Fire extinguishers are inspected periodically. These extinguishers are placed in strategic locations throughout the site. All fire extinguishers on site are compliant with American National Standards Institute (ANSI) criteria for responding to ABC class fires. These systems will be used only for small and immediately confined (first responder) fires. In all other incidents, the local Fire Department listed in Section 7.1 will be contacted to combat the fire.

6.9 Medical and Fire Emergency Plans

In the event of a medical emergency, the Emergency Coordinator must request outside emergency medical services and transportation to local hospital emergency room. Refer to Section 7.1 for emergency contact phone numbers. Contaminated individuals will be removed from the site and gross contamination will be removed by taking or cutting off their clothing.

If there is imminent danger, the Emergency Coordinator will evacuate personnel. Upon evacuation of the site, all employees, except those with emergency responsibilities, are to go to a location designated by the Emergency Coordinator which is upwind of the incident location and remain there until a head count can be taken. Under no circumstances are employees to go home until given approval to do so by the Emergency Coordinator or a designated representative.

7.0 EMERGENCY SPILL CONTROL NETWORK

7.1 Arrangements with Local Emergency Response Agencies and Hospitals

In the event of an accident, spill, or release requiring outside assistance, the following emergency response contractors, agencies, and hospitals are available to assist the facility.

Medical Agencies	
Washington Hospital	(724) 225-7000
Ohio Valley Hospital	(740) 283-7000
Canonsburg Hospital	(724) 745-6100
Washington Hospital – Burgettstown Medical Plaza	(724) 947-6261
Southwest Regional Medical Center	(724) 627-3101
St. Clair Hospital	(412) 561-4900

Emergency Contacts	
All Emergencies or use Satellite numbers only	911
Washington County Satellite Phone Number	(724) 229-4600

Emergency Response Contractors	
Spills: Weavertown Environmental Group	(800) 746-4850
Alex E. Paris	(724) 947-2235
Pipelines: Alex E. Paris	(724) 947-2235
TEAM Industrial Services Inc.	(800) 662-8326

7.2 Notification Lists

The Emergency Coordinator will notify the following company officials, as appropriate:

Range Resources – Company Officials

Name	Title	Telephone Number
Mark Hansen	Vice President - EHS	(817) 869-4217
Ray Walker	Vice President – Shale Appalachia	(724) 743-6700
John Applegath	Vice President - Operations	(724) 743-6700

The following list of government agencies and emergency organizations will be notified, as required, depending on the emergency and required response:

Emergency Management Contacts

Reporting Agency	Telephone Number
Weavertown Environmental 24-Hour Emergency Response	(800) 746-4850
Alex E. Paris 24-Hour Emergency Response	(724) 947-2235
County of Emergency Management Agency Washington County [Monday – Friday 8:30 a.m. – 4:40 p.m.] *Nights and weekends all calls are forwarded to 911	(724) 228-6911
PA DEP Regional Office	(412) 442-4000
PA Emergency Management Agency	(717) 783-8150
PA DEP Emergency Hotline	(800) 541-2050
National Response Center (Only if the spill leaves the property and is likely to enter navigable waters)	(800) 424-8802
PA Fish Commission Waterways Patrolman	(814) 445-8974

A written follow-up requirement is required within 15 days after reporting the spill. This written report should be mailed to the agencies with the exception of the National Response Center, which does not require a written follow-up. An incident report form that will supply all of the

required information for federal, state, and local authorities and mailing addresses is included in Appendix A.

7.2.1 Notification Protocol

The following narrative should be followed for making initial verbal contact with any Emergency Agency:

“This is *[state your full name]* with Range Resources – Location Coordinates. We have an emergency. Our emergency is a *[specify type of emergency.]*”

FOR PRODUCT SPILL:

It is estimated that *[state quantity]* of *[state product]* has been released.

The spill is *[contained/not contained]*.

The release occurred at *[state time – a.m./p.m.]* and lasted for approximately *[state period of time]*.

The medium or media into which the release occurred is *[state air, water, ground etc.]*.

The number of people known to be involved in the emergency is *[state number]*.

There are *[state number]* of injuries known at this time.

WAIT FOR OTHER PARTY TO HANG UP FIRST!

7.3 Downstream Notification

Not applicable at this facility.

8.0 STORMWATER MANAGEMENT ACTIVITIES

No stormwater drains are located at the sites identified in the Drilling Permit Application. Intermittent or perennial waterways within the anticipated area of influence, in the event of a release at the site, will be identified and mitigated

The procedures for site housekeeping and inspections programs, are considered to be reasonable and appropriate, and are consistent with Best Management Practices for this type of site in regards to stormwater management.

9.0 EROSION AND SEDIMENTATION PREVENTION

During construction or earth disturbance, the control of sediment migration and erosion is addressed by installing silt fences where appropriate and promptly covering disturbed land with topsoil and seed.

Where required, an Erosion and Sedimentation Control General Permit 1 will be obtained from the PADEP. An Erosion & Sedimentation Control Plan will be prepared for each site where earth disturbance activities will occur and will contain the following:

General Information

Project Description

Erosion & Sedimentation Control

Staging of Activities

Maintenance Program

Seeding, Mulching & Soil Conditioning

Hydrology

Soil Maps

Soil Information

Location Map

Exhibits

Access Road Construction	Ditch Details
Construction Entrance	Maps & Plans
Roadway Drainage	Access Road Plan
Culvert Installation	Well Site Plan
Broad Based Dips	List of Symbols
Filter Fabric Construction	
Straw Bale Filters	

10.0 ADDITIONAL REQUIREMENTS FOR EPCRA SECTION 313 FACILITIES

Not applicable. The site does not meet the criteria for EPCRA Section 313 reporting.

11.0 SIGNATORY REQUIREMENTS

The Preparedness, Prevention and Contingency Plan certification signature is included in Section 1 and signed by a signature authority as required.

12.0 PLAN REVISION AND RECORD RETENTION

The following documents related to this Preparedness, Prevention and Contingency Plan shall be kept on file for a period no less than three years:

- Inspections Records
- Corrective Action Documentation
- Training Records
- Annual Inspection Reports
- Spill Reports

This plan shall be amended whenever:

- There is a change in site construction, operation, or maintenance that may affect the discharge of significant quantities of pollutants to water, air, or land of the state.
- If a site inspection indicates the need for a plan amendment.
- If the project is found to be in violation of any of the discharge permit conditions.

A record of amendments and description of the amendments shall be signed by the Signature Authority and maintained in accordance with this section. This is included in Section 2.

APPENDIX A



INCIDENT REPORT

Environmental & Safety
V2007-1

GENERAL INFORMATION			
LOCATION:			DISTRICT:
DEPARTMENT:			FIELD:
REPORTED BY:			PHONE #:
NOTIFIED BY:			PHONE #:
WITNESSES:			PHONE #:
DATE OF INCIDENT:	TIME:	DATE REPORTED:	
PHOTOS TAKEN?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	IF YES, SENT TO:
INCIDENT:	RANGE <input type="checkbox"/>	CONTRACTOR <input type="checkbox"/>	CONTRACTOR/OTHER:
IDENTIFY INCIDENT			
INJURY:		PROPERTY DAMAGE:	ENVIRONMENTAL:
Injured Party: _____ Injury Type: _____ Lost Days (if applicable): _____ Date Returned to Work (if applicable): _____		<input type="checkbox"/> Other: _____ PROCESS LOSS: _____ Other (Specify): _____ Total Estimated Cost: _____ AFE # (if applicable): _____	<input type="checkbox"/> Spill Volume _____ <input type="checkbox"/> Spill Recovered _____ bbls <input type="checkbox"/> Water <input type="checkbox"/> Hydrocarbon <input type="checkbox"/> Emulsion <input type="checkbox"/> Gas <input type="checkbox"/> Gas Leak Volume _____ <input type="checkbox"/> Public Impact / Complaint <input type="checkbox"/> Emission Limit Type _____ <input type="checkbox"/> Regulatory Action TERRAIN AFFECTED: _____
OSHA	Env Reportable?		
_____	Yes <input type="checkbox"/> No <input type="checkbox"/>		
PERSONNEL/GOVERNMENT AGENCIES NOTIFIED (IF MORE SPACE REQUIRED, PLEASE LIST ON SEPARATE SHEET)			
DATE NOTIFIED:	AGENCY CONTACT PERSON:	CONTACT PHONE #:	AGENCY/RANGE DEPARTMENT:
Clearly describe how the incident occurred (ex: who, what, when, where, why and how. Address all items checked above. Include recent trends based on risk assessments and observations. Update this section as information becomes available.			
Date	Description		
IMMEDIATE CAUSES			
<input type="checkbox"/> Following Procedures	<input type="checkbox"/> Following Procedures	<input type="checkbox"/> Following Procedures	
<input type="checkbox"/> Use of Protective Methods	<input type="checkbox"/> Use of Protective Methods	<input type="checkbox"/> Use of Protective Methods	
<input type="checkbox"/> Inattention/ Lack of Awareness	<input type="checkbox"/> Inattention/ Lack of Awareness	<input type="checkbox"/> Inattention/ Lack of Awareness	
REMEDIAL ACTIONS SECTION			
REMEDIAL ACTIONS (to reduce or eliminate the direct and indirect causes)			
Description	Target Date	Completed Date	Action By

Please E-Mail Completed Form to mhansen@rangeresources.com or fax to (817) 869-9168 attn: EHS Dept.

Annual Facility Inspection Checklist

This inspection record must be completed *each year*. If any response requires further elaboration, provide comments in Description & Comments space provided. Further description and comments, if necessary, must be provided on a separate sheet of paper and attached to this sheet. *Any item that receives "yes" as an answer must be described and addressed immediately.

WELL NAME: _____

	Y	N	N/A	Description & Comments
Storage tanks				
Tank surfaces show signs of leakage				
Tank is damaged, rusted or deteriorated				
Bolts, rivets or seams are damaged				
Tank supports are deteriorated or buckled				
Tank foundations have eroded or settled				
Level gauges or alarms are inoperative				
Vents are obstructed				
Oil is present in the interstice				
Containments				
Surfaces show signs of Leakage				
Containment is damaged or deteriorated				
Piping				
Valve seals or gaskets are leaking				
Pipelines or supports are damaged or deteriorated				
Joints, valves and other appurtenances are leaking				
Buried piping is exposed				
Out-of-service pipes are not capped				
Warning signs are missing or damaged				
Loading/unloading and transfer equipment				
Concrete in area is deteriorated				
Connections are not capped or blank-flanged				
Drip pans have accumulated oil or are leaking				
Security				
Lighting is non-functional				
Pumps and valves are not locked (and not in use)				
Response equipment				
Response equipment inventory is incomplete				

Annual reminders:

- < Hold SPCC Briefing for all oil-handling personnel (and update briefing log in the Plan);
- < Check contact information for key employees and response/cleanup contractors and update them in the Plan as needed

Additional Remarks:

Date: _____

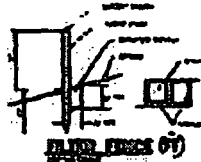
Signature: _____

Impoundment Inspection Report

Input Fields	Description
General Information	
Impoundment Name	
Date	
Time	
Inspector	
Impoundment Contents	
Water Type	Fresh, Blended or Other
Current Volume (bbis)	
pH	
Specific Conductance (umhos)	
TDS (ppm)	
Boom Installed	Yes or No
Are there Noticeable Odors?	None, Hydrocarbons, Algae, Other
Is Skimming Required?	Yes or No
Leak Detection	
Flow in the under drain?	Yes or No
Rate of Flow (gpm)	
Estimated Volume of Fluid Leaked	
pH	
Specific Conductance (umhos)	
TDS (ppm)	
Is flow contained on location or in sediment trap?	Yes or No
Has flow entered nearby stream or tributary?	Yes or No
Upstream Water Quality Measurements	
pH	
Specific Conductance (umhos)	
TDS (ppm)	
Downstream Water Quality Measurements	
pH	
Specific Conductance (umhos)	
TDS (ppm)	
Estimated Length of Stream Contamination (ft)	
Observed Impacts to Aquatic Life	
Structural Inspection	
Are the impoundment slopes vegetated?	Yes or No
Are there areas of observable slumping or erosion on the slopes?	Yes or No
Are the proper Erosion & Sedimentation BMPs in place and functioning?	Yes or No
Are there observable holes in the liner?	Yes or No
Is the liner floating?	Yes or No
Is there high tensile fencing installed?	Yes or No
Access Road Condition	Excellent, Fair or Poor

APPENDIX B

APPENDIX C



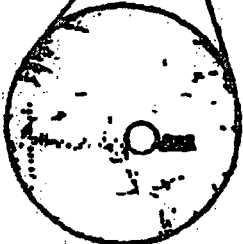
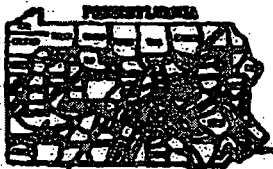
Topographic Map prepared by [Firm Name], Inc., dated [Date]

NOTES

PROPOSED FRACKING POND
 BOTTOM ELEVATION 1777.0
 BERM ELEVATION 1782.0

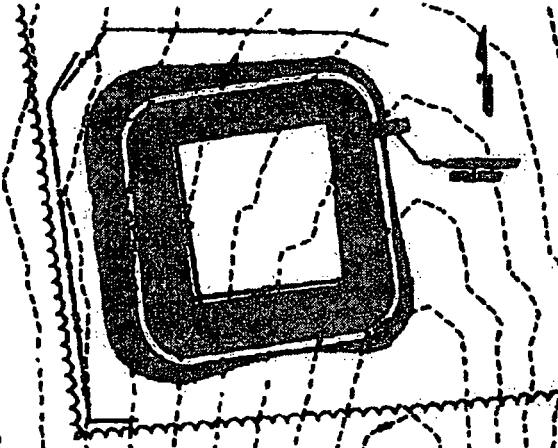
DESIGN INFO:
 INSIDE SLOPED 3:1
 OUTSIDE SLOPED 2:1
 POND BOTTOM SLOPED 1:1
 BERM WIDTH 12'

Pond Volume:
 6,577,823.57 gallons (US)
 92,340.4 barrels (petroleum)



Location Map
 Sheet 1 of 1

NOTES:
 1. The proposed pond is located within the existing [land use].
 2. The pond shall be constructed in accordance with the design specifications.
 3. The pond shall be surrounded by a 12-foot wide berm.
 4. The pond shall be filled with [fluid type].
 5. The pond shall be maintained in accordance with the [regulations].



1" = 100'

Proposed Fracking Pond for Energy Resources Development LLC Project No. [Number] Date: [Date]	
Prepared by: [Name] Checked by: [Name] Drawn by: [Name]	Scale: [Scale] Sheet: [Sheet Number] of [Total Sheets]

APPENDIX D

Preventive Spill Plan

The purpose of this portion of the PREPAREDNESS PREVENTION AND CONTINGENCY PLAN (PPC) is ensure that adequate engineering controls are designed and utilized to minimize the potential of a spill being created due to a failure. This protocol allows for the standard practice of defining a quality control process or process safety management which assesses the process flow as a means to maintain continuous improvement during the transferring of liquids. The Management of Change procedure will be implemented to ensure that like parts are utilized and an approval of the change has been authorized by a competent Range Resources representative. In order to achieve this, the processes will be separated into various sections that have the potential to have a spill. For each section, the process control, engineering review of equipment and means to ensure that all contractors and Range Resources' personnel are aware of the processes involved and are trained accordingly.

The quality process will highlight the following areas:

TRAINING

Contractor: Range Resources will provide documented training on the PPC Plan to ensure that all contractors are aware of its function and issue them a traceable copy (controlled document). Each copy of the PPC Plan will be assigned a number referencing that contractor's name. A log of the issuance will be maintained by the Range Safety Department in Canonsburg, PA. The contractor will be instructed that it is necessary for their copy to be present with their employees when they are conducting business for Range or when they are present on any Range site. Copies of the issued PPC Plan can be reproduced and distributed to their employees as necessary.

It is the responsibility of the contractor to provide training to their employees that will be in a position that requires them to act in the event of a release (leak or spill). These employees will need to understand the function of the PPC Plan along with the reporting structure that must be followed. Range has the right to require that these employees understand and follow the protocol

established to ensure that failures do not occur. Failure to follow these work requirements could jeopardize the contractor's ability to conduct business with Range in the future.

Contractor Employees: In an effort to eliminate the potential for releases, it is the responsibility of the contractor to provide adequate training to its employees so that they have a level of competency to perform their tasks proficiently. Each employee should understand and recognize hazards within their areas of operation that could pose harm to personnel or the environment. Employees should recognize that specified equipment is being installed and should ensure that any substitutions of equipment or materials follow an approved Management of Change process.

Any new employees hired by the contractor must be trained on the PPC Plan process. The contractor will be subject to audit by Range at any time to ensure that complete records are being maintained. It is the responsibility of the contractor to ensure that this procedure is being followed.

LIQUID TRANSFER

The transfer of fluids results in the largest risk with respect to the potential for spills which may impact the environment. Water is transferred through above ground piping in several different scenarios including, but not limited to:

- Centralized Water Impoundment to Centralized Water Impoundment
- Centralized Water Impoundment to Well Pad Storage Tanks
- Well Pad Storage Tanks to Blender
- Wellhead to Flowback Tanks
- Flowback Tanks to Centralized Water Impoundment
- Flowback Tanks to Production Storage Tanks

Range Resources has developed Construction, Operation, and Testing Standards which will be provided to all contractors installing or operating aboveground pipeline in any of these instances.

The contractor will be provided training on the standards described in the plan and will be provided a copy of the standards. It will be the responsibility of the contractor to train all personnel that will be working on the pipeline on the standards and document that the personnel have been trained. Any contractor not following the standards detailed in this plan will jeopardize their right to do future work with Range Resources.

PROCESS CONTROL

Process control is a means of identifying the type of work being performed, materials to be required and a plan to install or rig up such equipment. The process will require that the flow material be engineered to meet the specifications set forth by Range for the task at hand.

Range expects that contractors will be able to professionally engineer a process that identifies materials required and that will perform the needs taking into account terrain, location size, restrictions and weather conditions as well to eliminate failure. Any additional fail-safe measures should always be recommended as new technologies are developed to minimize risk.

MANAGEMENT OF CHANGE

In formalizing a substitution process for equipment or materials, Range will utilize a process taken from Process Safety Management (29 CFR 1910.199). The use of Management of Change within this sector requires the need to ensure that the components being replaced have been selected based on their ability not to compromise the specifications of the original equipment or materials. Therefore, accurate specifications of the original equipment must be maintained in order to maintain integrity. Once a replacement product has been selected, the Management of Change must be approved by a Range representative. In some cases, supportive documentation may be requested.

Management of Change not only addresses maintenance but it also addresses what should be done should a change in the process itself be required. An approval of the change would still be documented and required by a Range representative. All personnel involved in the process will

need to be trained in the understanding of the change and what modifications will need to be made.

ENGINEERING STUDY OF EQUIPMENT

The type of equipment being used to conduct the process will need to be selected based on the performance required. The specifications will be the responsibility of the contractor. The contractor will mark all transfer equipment with the pressure ratings, classification and owner's name on each section. The transfer equipment described are the sections of transfer piping, fittings or fluid transfer hoses. All gasket materials used to make connections must be inspected prior to each use in order to assure integrity. Any gaskets not deemed to be suitable will be replaced immediately. Spares should be maintained at all times so as not to compromise the transfer equipment.

Any connections that require mechanical means to secure them should ensure that the instruments are functional. Any plumbing that can become loose due to vibration must use locking mechanisms. The type of the mechanisms utilized should be engineered to maintain their integrity throughout the project.

WORK PRACTICES

The tasks being conducted by all personnel in the operation are responsible to ensure that breaches are immediately addressed once discovered. During the Job Safety Analysis or Hazard Assessment Analysis, potential non-conformities will be identified and a means to monitor will be discussed. Personnel assigned to other duties may be asked to maintain vigilance on any equipment in their view of site or designated area. All personnel conducting tasks on the worksite must be competent in the performance of their duties. Certain job tasks require certification. Any employee conducting these functions must have current valid certifications for specified equipment type being operated where applicable.

Any SSEs (Short Service Employees) that are working in the area will be assigned a mentor who will conduct on-the-job training. The mentor must ensure that the SSE comprehends the task being assigned and can carry it out proficiently. The SSE should not be allowed to operate any equipment unless they have been authorized to by the mentor or a qualified person.

STOP WORK authority is a practice that allows any employee with any company on the work site to stop the work being performed should there be imminent danger associated with any task being performed. This practice gives authority to all individuals to monitor the worksite and make decisions that can prevent the damage to the environment, equipment or injury to any employee. The incentive for this practice is to encourage personnel to look for situations that can cause a disruption to the operation without retribution.

REPORTING STRUCTURE

A general reporting structure has been developed for all Range sites. No names are provided in the flowchart, due to the fact that the names may change based on the project or job task being performed. This flowchart will be reviewed on each site with all personnel performing tasks during the job and names will be assigned and phone numbers will be provided for each general job title provided on the flowchart. The flowchart will be provided to each person working on the job for their use if an incident occurs that requires reporting.

NON-COMFORMANCE

Non-conformities define the failure in either a process or a failure of equipment or materials. In order to minimize the probability of a failure, competencies must be met. All non-conformities must be reported immediately and the corrective measures implemented. Once the control of the failure has been completed, the investigative process shall be initiated.

Bearing in mind that the term non-conformity can apply to operational issues as well as equipment functionality poses the need to ensure that personnel perform accordingly. In order to minimize equipment failure, it is imperative that personnel provide adequate maintenance and

inspections. Failure to provide these services will be considered a non-conformity and corrective measures must be implemented immediately to ensure that these vital needs are met.

CORRECTIVE MEASURES

For a release, a corrective measure implies that all resources will be deployed to restrict the potential for damage to the environment. Barriers such as booms and absorbent materials are available for use in areas that can assist in restricting the flow of the released material. Vacuum trucks will be utilized where possible and remedial measure will be put in place to minimize impact.

DISPOSAL

The disposal of any liquid residual waste or produced water will be in accordance with Pennsylvania regulations and at those sites mentioned in Section 6.6 under Countermeasures of this document. These facilities have already been identified and authorized by Range Resources Regulatory Department and should not be deviated from.

Solid waste will be analyzed to determine if any hazards exist and will be disposed of according to state regulations. Identified Emergency Management contactors will be responsible for following regulations to ensure that Range complies accordingly. Any discrepancies or clarifications must receive approval from Range's Regulatory Department prior to movement of the solid waste.

APPENDIX E

**CONSTRUCTION, OPERATION, AND
TESTING PROCEDURES FOR
ABOVEGROUND PIPELINES**

RANGE RESOURCES – APPALACHIA, LLC

**Prepared by:
Range Resources – Appalachia, LLC
380 Southpointe Blvd., Suite 380
Canonsburg, Pennsylvania 15317**

OCTOBER 2009

CONSTRUCTION, OPERATION, AND TESTING PROCEDURES FOR ABOVEGROUND PIPELINES

RANGE RESOURCES – APPALACHIA, LLC

1.0 INTRODUCTION

These Construction, Operation, and Testing Procedures are intended to be used by all Range Resources operations personnel and contractors for aboveground piping being installed for the purposes of conveying water that is not fresh water.

1.1 Pipe

All pipe shall be manufactured to the dimensions and tolerances specified in the manufacturer's specifications for the specified piping. The pipe shall be inspected by the manufacturer per industry accepted manufacturer standards for the following:

- Diameter;**
- Wall thickness;**
- Concentricity;**
- Quick burst pressure and ductility; and**
- Overall workmanship inspection on inside diameter (ID) and outside diameter (OD).**

The pipe shall be homogeneous throughout and free of visible cracks, holes, voids, foreign inclusions, or other deleterious defects. The pipe shall also be identical in color, density, and other physical properties throughout. The pipe manufacturer must certify that the pipe meets the ASTM specifications appropriate for the type of pipe being installed and provide that certification to the contractor.

1.2 Fittings

All fittings for piping shall be standard commercial products manufactured as specified for the pipe to be utilized. The fittings shall be supplied by the same manufacturer as the pipe. The manufacture of the fittings shall be in accordance with good commercial practice to provide fittings homogeneous throughout and free from cracks, holes, foreign inclusions, voids, or other injurious defects. The fitting shall be as uniform as commercially practicable in color, opacity, density, and other physical properties. The minimum "quick-burst" strength of the fittings shall not be less than that of the pipe with which the fittings is to be used.

2.0 DELIVERY

2.1 Labeling

The Pipe Manufacturer shall identify the segments of pipe with the following:

- Nominal size;
- Pressure rating;
- Type or trade name of pipe; and
- Material Classification.

A Range Resources representative or a contractor's representative under the direction of a Range Resources representative shall examine the pipe upon delivery to the project site and any deviation from the above requirements shall be reported to the manufacturer. Any pipe that deviates from the specification shall not be used in the water transfer operation.

2.2 Transportation and Handling

The pipe shall be transported in a manner designed to deliver the pipe to the project neatly, intact, and without physical damage. The pipe shall be properly supported, stacked, and restrained during transport such that the pipe is not nicked, gouged, or physically damaged. A Range Resources representative shall conduct an inspection of the pipe for defects and damage upon delivery to the site.

2.3 Storage

Pipe shall be stored on clean, level ground to prevent undue scratching or gouging of the pipe. If the pipe must be stacked for storage, such stacking shall be done in accordance with the pipe manufacturer's recommendations when on a Range site. The handling of the pipe shall be done in such a manner that it is not damaged by dragging over sharp objects or cut by chokers or lifting equipment.

Sections of pipe with cut or gouges greater than 10 percent of the wall thickness of the pipe shall be cut out and removed. The undamaged portions of the pipe shall be rejoined by the manufacturer's recommended method.

3.0 INSTALLATION

3.1 Installation Process Preparation

The pipeline route shall be determined in advance by Range Resources operations personnel and the contractor performing the pipeline installation. When determining the pipeline route, care should be taken to avoid crossing streams to the greatest extent possible, especially High Quality and Exceptional Value streams. In addition, where it is necessary to utilize an existing culvert under a road for the purposes of crossing the

road with the pipeline, permission shall be obtained from either the township or the state, depending on the designation of the road.

3.2 Installation Procedures

When installing the pipeline, Range Resources personnel shall ensure that the contractor does not install 90° elbows, especially at critical points, such as at low points in the pipeline. In locations where a 90° elbow might be utilized, a sweep (long radius 90° elbow) shall be utilized in lieu of the 90° elbow to help to avoid excess restrictions thus resulting in higher pressures and blow-outs of the pipeline at these types of locations.

The contractor installing the pipeline shall install check valves at a minimum at all low points in the pipeline. The purpose of the check valves is to help to eliminate a discharge of water if the pipeline is compromised. Additionally, the contractor shall install check valves on straight runs of pipeline if there has been no check valve installed due to elevation change for 300 yards. This will allow for isolation of portions of the pipeline if the pipeline is compromised or for the purposes of emptying the line. Check valves shall also be installed on either side of a road crossing, where the pipeline is installed through an existing culvert under the road that serves to convey stormwater under the roadway.

At all locations where elbows and sweeps are used in the pipeline, an energy dissipater shall be utilized to help absorb any "water hammer" effect that may occur at those critical points due to turning pumps on and off. Alternatively, the pipeline installation contractor shall provide for flexibility at the joints of the piping. The energy dissipater may be placing soil over the pipeline at the location of the elbow or sweep, placing hay bales or temporary "thrust blocks" at the location of the elbow or sweep. Additionally, elbows and sweeps suspended in the air shall be braced through the use of hay bales or some sort of temporary "block" to absorb the energy.

3.3 Road Crossings

All road crossings shall be evaluated by Range Resources operations personnel during the planning process. Installation of pipeline through an existing culvert shall be avoided if at all possible by installing a new culvert in the road or by crossing the road above the road surface by using bridges and flag men. If there is no alternative but to install the piping through an existing culvert, Range Resources personnel shall obtain approval from either the township or the state, dependent upon the classification of the road. If the piping is installed through an existing culvert that is used for stormwater conveyance under the road, the piping shall only be in place as for the time period necessary for the water conveyance. While the piping is in place through the culvert, Range Resources operations personnel shall periodically monitor the flow through the culvert and remove the pipeline if the roadway is about to be breached by stormwater flow that cannot adequately pass under the roadway through the culvert.

4.0 JOINING

Sections of pipe should be joined into continuous lengths on the job site. The joining method shall be a method appropriate for the type of pipe being utilized and shall be performed in strict accordance with the pipe manufacturer's recommendations. No piping or fittings shall be joined by gluing. The equipment used in the joining procedures should be capable of meeting all conditions recommended by the pipe manufacturer. Only like fittings shall be used.

All pipes, fittings, and joints shall be inspected by the contractor or Range operations personnel installing the pipe. The contractor or Range operations personnel shall ensure that pipes and fittings are not broken, cracked, or otherwise contain damaged or unsatisfactory material. Prior to joining, the contractor or Range operations personnel

shall ensure that the surface area is clean and free of moisture, dust, dirt, debris of any kind, and foreign material.

The contractor and Range operations personnel shall inspect all joints following joining. Joined segments of pipe shall be handled so as to avoid damage to the pipe. When lifting or moving joined sections of pipe, chains or cable type chokers must be avoided. Nylon slings are preferred. Spreader bars are recommended when lifting or moving long joined sections. Care must be exercised to avoid cutting or gouging the pipe.

5.0 NON-DESTRUCTIVE TESTING

All pipe joints must be non-destructively tested by hydrostatic pressure testing. Other non-destructive tests may be used if all of the following conditions are satisfied:

- The contractor installing the pipe can document its effectiveness;
- The method is approved by the pipe manufacturer; and
- The method is approved by Range Resources personnel.

The Range Resources Environmental Engineering Manager or Regulatory Manager shall verify the effectiveness and validity of the proposed test method.

The hydrostatic pressure test shall be performed using fresh water and in accordance with the pipe manufacturer's recommendations and current industry standards. The contractor or Range Resources operations personnel shall follow all safety requirements. The general procedures for the hydrostatic pressure test are as follows:

- The pipe shall be in place and all connections made prior to testing.
- The entire length of pipeline shall be tested as one test, unless approved to be tested in shorter segments by Range Resources personnel.

- Hydrostatically test the pipe to the manufacturer's rated pressure for the pipe, within the limitations of the topography.
- The line being tested is acceptable if there is no more than a 5% pressure drop over 30 minutes. Every joint and mechanical connection shall be inspected while under pressure, and any joint that shows any leakage shall be repaired and then the pipeline retested.

The contractor shall record the beginning and ending pressure and beginning and ending time of each test. As an additional means of recording the pressure test, the contractor performing the test may choose to line chart the pressure test. This record shall be supplied to Range Resources personnel by the contractor for Range's files. The contractor shall also record any leaks that were found and repaired during the test and the information for the retest after repair.

6.0 PIPELINE MONITORING DURING OPERATION AND REMEDIAL MEASURES

6.1 Pipeline Monitoring

The contractor shall monitor the pipeline at all times during pumping operations. The contractor shall provide sufficient personnel to monitor all points along the pipeline at least one time per hour. All monitoring activities shall be recorded and provided to Range Resources operations personnel on a daily basis. The contractor shall record the following information:

- Name of person performing the monitoring;
- Portion of pipeline being monitored (for example, monitoring pipeline for booster pump 1 to stream crossing at xyz road);
- Time that person begins walking the segment of pipeline and completes walking the segment of pipeline;

- If no leaks were encountered during the monitoring period, record that no leaks were encountered; and
- If a leak was encountered, the location of the leak and the immediate response that was performed to remedy the situation.

Additionally, all pumps, including booster pumps, shall be manned by contractor personnel at all times during operation. Alternatively, the contractor may equip the pumps with automatic shut-off switches that will sense a significant pressure drop and automatically shut off the pump.

Finally, the contractor may choose to line chart the pressure on the pipeline during operation to maintain a record. This record shall be supplied to Range Resources personnel by the contractor for Range's files.

6.2 Remedial Measures on Standby

At all times during the pumping operations, the following remedial measures shall be kept on standby at the locations detailed for the length of the pipeline:

- Fresh water shall be kept either in tanker trucks or in frac tanks at the well site where operations are being conducted. Alternatively, the contractor or Range Resources operations personnel may choose to locate the fresh water near the location of stream crossings or other environmentally critical areas of the pipeline.
- Absorbent materials shall be kept near environmentally critical areas, such as areas where the pipeline crosses streams or at low points in the pipeline.
- A vacuum truck shall be kept on standby at all times during the pumping operations.

In the event of a spill from the pipeline, the contractor and Range Resources personnel shall immediately implement the PPC Plan.

APPENDIX F

MATERIAL LIST

The following products may be used for the operations described above, but are subject to change based on the circumstances encountered during the development of the project. The MSDS for each product are required to be on site while any chemical is staged on location.

#190 Penetro 90 Spray	ANCO BAR
#199 Silver Streak Wire Rope Lube	ANCO BX
#199 Silver Streak Wire Rope Lube Spray	ANCO CAT
#274 Moly EP Synthetic Plus Grease #1	ANCO DD
#700 Supreme 7000 SAE 15W-40	ANCO Defoam
40 HTL	ANCO Drill (A, N)
6040 Blend	ANCO Fiber
ABS MUL	ANCO FSG 2000
ABS-4 MUD	ANCO GEL
ABS-40	ANCO LIG
Acetic Acid 60%	ANCO Liquid Phalt S
Acid Pensurf	ANCO Micro blend
Acroclear	ANCO MUL MOD
Al-2	Anco Mul OW
Al-250	Anco Mul P
Airfoam 311	ANCO Mul S
ALCOMER 74-1/Anco Thin HT-L	Anco Mul T
ALCOMER 90L	Anco Mul T Plus
Aldacide G Antimicrobial	Anco Mul Thin
ALL CMS	Anco Pac
ALL Defoam	Anco PH PA
ALL PAC	Anco Phalt Plus
ALL PAC UL	Anco Phalt S
ALL Shale HIB	Anco Pipe Free
ALL Slide DB	Anco Poly Beads
ALL STC	Anco Rig Wash
ALL Surfak PG	Anco Rope
ALL Tex	Anco Salt Gel
ALL Walnut Beads	Anco Shale Treat
Alpha 125	Anco Sorb (Alcosorb)
Alpine Drill Beads	Anco SPA
Aluminum Stearate	Anco Sperse
Aluminum Sulfate	Anco Starch (W-Y)
Amaizo Starch	Anco Trol
Ammonium Nitrate	Anco Vis N. S.
Ammonium Bifluoride	Anco Zan
Amonium Phosphate	AncoVis L

Antifoam D046
APB-1
APB-1 Ammonium Persulfate Breaker
Aqua Clear NA Minus
Aqua Clear Salt Dissolver
Aqua Pac
Aquabloc
AQUET 921 Emulsifier
ARFLOW
Asphasol Supreme
B9
Bara-Defoam
Barazan D Plus
Barite
Barite
Barite D31
Barium Sulfate
Baroid
Baro-Seal
Basic Cements Enabler D201
Bentone 38
Bentone 910
Bentonite
Bentonite Extender D20
Benzoic Acid
BIO ADD 7555
BIO COR 2899
Bioban CS-1135
Bio-Clear 1000
Bio-Clear 200
Bio-Lose
Biozan
Blackseal
Bromocresol Green-Methyl Red Indicator
Bug X Deet Insect Repellent Towelette
BXL-2
BXL-2
Cal Carb Mix
Calcium Carbonate
Calcium Carbonate D151
Calcium Chloride
Calcium Chloride 77-80% Flake
Calcium Hypochlorite
Calcium Hypochlorite
CARBOPRO (All Mesh Sizes)
Casing Inhibitor

Caustic Potash-Flake
Caustic Soda
Cedar Fiber
Cellosoze Polymer HEC-18
Cellophane Flakes
Cement
Cement Class A D901
Cenospheres
CFL-25
Chem-Seal
CI-300A
CITGO Gasolines – All Grades
CITGO No.1 Diesel Fuel – All Grades
CITGO Pacemaker Engine Oil 1015
CITGO Pacemaker Engine Oil 1615
CITGO Pacemaker Engine Oil 1715
Citric Acid
Citric Acid Soln 50
Citric%20 Acid, %20 Anhydrous
CLA-CHEK A
CLA-CHEK LP
Clearstick 505
Clearstick 505 Soap Stick
Condensate
Cottonseed Hulls
Crumb Rubber
Crystalline Silica
CS-250
CS-250 SI
CS-650 OS
CS-Polybreak 210
CYANAFLO 105L Polymer Additive
Defoam X
Desco
Desco CF
DF-450
DF-650
DF-900
DI Water
Diald 25
DIALD25
Diaseal M
Diesel Fuel
Diesel Fuel-High Sulfur
Diesel Fuel-Low Sulfur
Diesel-Mate Clear

Methanol
Methyl Purple Indicator
MF-55
M-I Bar
MI GEL
MI WATE
Mica
Mica (F, C)
Microspheres
Mil-Glide
Mil-Pac All Grades
MilStarch
MIX II
M-I-X II
MRA
Mud Safe CR
MUDPUSH II Spacer D182
Multi-Chem B-8642
Multi-Chem B-8650
Multi-Chem C-6003
Multi-Chem DFv7120
Multi-Chem EB 1085
Multi-Chem FA 4012
Multi-Chem FA-4100
Multi-Chem FA-4211
Multi-Chem FS-7584
Multi-Chem HI-1000
Multi-Chem M-8172
Multi-Chem MX 14-5
Multi-Chem MX 4-1201
Multi-Chem MX 525-5
Multi-Chem MX 822-5
Multi-Chem MX 894-7
Multi-Chem MX 915-5
Multi-Chem S-2009
Multi-Chem S-2510T
Multi-Chem S-2530
Multi-Chem SS-5075
Multi-Chem SS-5189
Multi-Chem SS-5339
Multi-Chem SS-5359
Multi-Chem SS-5651
Multi-Seal
Myacide
N-17 Formula Antifreeze & Coolant
NE 100

NE 100 (winterized)
New 100 N
New PHALT
New PHPA
New Xan
NewBar
New-Drill
NewEase 203
NewPHPA
NewPlug
NoFoam A
NoFoam X
North 222 Barrier Cream
Nutshell (F, M, C)
OAI-815
Oil Base Mud
Oil Dry
OILSORB
Organolig
Ox-Breaker
Oxygen Scavenger ABS-N 70%
Para-Clear D-290
Paranox
Parasol II
Parasurf
PB Blaster
Pecan Nut Plug
Perma-Lose HT
PERMASEAL
Pheno Seal
PHPA DSL015822
Pipe Lax
Poly Pac R
Poly Plus
Poly Sticks
Polymer Beads
PolyPac Plus
PolyPac UL/ELV
PolyPlus RD
Polyswell
Portland Cement
Potassium Acetate
Potassium Chloride (KCL)
Potassium Chloride Solid
Potassium Chromate Solutions
Premium Poly Beads

Propane
Pump Kleen
Q40-200
Quartz
Quick Slide
Reb-Kleen
Rebound
Red Stripe
Resin Coated Silica
Rid Rust
Sack Fishing Tool
Safe Carb
Safe Scav HSW
Safety-Kleen Premium Solvent
Salt Gel
SAPP
Sawdust
Sea Mud
Shale Surf 1000
Shale Surf 1000 (winterized)
Shur Plug
Silica Sand
Silver Nitrate
SILVERSEAL
So Lube 1000
Soap Sticks
Soda Ash
Soda Ash, Dense
Sodium Bicarbonate
Sodium Chloride
Sodium Chloride Solid
Sodium Hydroxide (Caustic Soda)
Sodium Tripolyphosphate Anhydrous
Soltex
Enviro Safe Mud Lubricant
Starch (W&Y)
Sulfamic Acid
Sulfatrol
Sulfuric Aid
Sunsweep
Super Slide Glass Beads (F,M, C, & Mega)
Super Surf
Super Sweep
Tannathin
Terra-Rate
TI-2

TIC D65 Dispersant
Tork Buster
Tork Buster Plus
Transfoam-A1
Trisodium Phosphate
TRU VIS
UNIBAC
UNI-FLO
UNIFLO 2
UNIFOAM
Unigel 19XL
Unigel 1XLR
Unigel 5F
Unihib A
UNILINK BXL
USG Hydrocal
UWS AGA-150
UWS BXL-A
UWS CFL-117
UWS CR-220
UWS NCL
UWS NDL-100
UWS NE-50
UWS NE-70
UWS NE-80
UWS NE-90
Variseal
Versa HRP
Versamod
Walnut Shells
Water Hardness Buffer
Water Hardness Indicators
WD-40
White Starch
WO Defoam
Wolfs Head Lubricating Grease
WT-22
Wyoming Sodium Bentonite
Xan-Plex D
X-Cide 102
X-Cide 207
X-Tend Lube Plus
X-Tend VIS
XX-Polymer
ZEP 45 Liquid
ZEP Cherry Industrial Hand Cleaner

ZEP Elec II Plus
ZEP Redi-Grease
ZEP Super Penetrant

ZEP Wasp & Hornet Killer
Zinc Carbonate